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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/830,582	08/02/2001	Kazumasa Ikushima	010620	5907

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EXAMINER

PARKER, FREDERICK JOHN

ART UNIT PAPER NUMBER

1762

DATE MAILED: 10/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/830,582

Applicant(s)

IKUSHIMA, KAZUMASA

Examiner

Frederick J. Parker

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 August 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 7, 9-12 and 14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7, 9-12 and 14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other:

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/21/03 has been entered.

Specification

2. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

The generic abstract does not meet the above requirements of the claimed invention.

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The generic abstract is not clearly indicative of the claimed invention.

Claim Objections

3. Claim 14 is objected to because of the following informalities: Claim 14, line 6, “the” should be inserted before entire area. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 14 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- Claim 14 is vague and indefinite because (1) the meaning of line 5, “said pattern is open in entire radial direction” is uncertain, and (2) it is unclear how “a pattern of a paste line” of line 2 can produce the radial pattern inferred on line 5.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this

subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-5, 7, 9-12, 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Ozono et al US 6348234.

Ozono teaches to apply adhesive paste patterns to lead frame substates for chip assembly (per claim 5) using an apparatus comprising syringe 15 (paste container) with nozzle 15a, valve 15b (supply means) and paste (col. 4, 42-49) per claim 2. By movement of the paste applicator and moving table 10 (per claims 4 & 10), segmented patterns of paste are continuously drawn (per claim 3) onto the substates to form radial designs such as an asterick, snow flake, etc (see col. 7, 63+; fig. 6A-D), per claims 1, 7, 9, 14. As described on col. 6, 32- col. 7, 23, starting point and end point may be coincidental or different, depending on the pattern, per claim 11, and further may be at the center rather than ends of the drawn pattern lines per claim 12. Application of amount of paste is assured with precision, col. 8, 36-47. Since the paste patterns of Applicant's figures 3, 6, and 7 are essentially identical to figures 3, 4A, 6A-B, respectively, it would have been inherent that similar patterns of paste applied for identical applications would have produced similar end products, namely a bubble-free bonding paste between the mating lead frame and chip surfaces.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 1-5,7,9-12,14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kunz US 4803124 in view of Ishida et al US 5932012.

Kunz discloses a method for bonding semiconductor chips to mounts surfaces (encompassing lead frames per claim 5) using die attach adhesive utilizing a dispensing head comprising flow passage 23 through which the paste is continuously supplied to dispensing nozzle 19 (per claim 3) to form a radial ("starfish" like) series of angularly/ radially disposed arms (segments) providing a volume of material proportional to the surface area being bonded to prevent voids from forming in the adhesive. The apparatus as described meets the limitations of claim 2. Forming the radial pattern by drawn paste lines is not cited.

Ishida et al teaches applying paste patterns, such as shown in figures 13-14 (per claims 9-10), to substrates using a device comprising a reservoir tube connecting a paste source and a nozzle, the latter applying paste onto a substrate by movement in X-Y-Z directions as controlled by a microprocessor. As described on col. 13, 30 to col. 14, 42 a radial form pattern of line segments may be formed. The substrate may be moved relative to the nozzle or the nozzle may move relative to the substrate, col. 15, 61-62 per claim 4. The method provides the express benefits of

forming paste in a desired pattern while controlling paste discharge which is an important aspect of Kunz.

Both references deal with the deposition of radial/ angularly disposed paste deposits onto substrates. Kunz teaches such deposits for the express benefit of preventing void formation, and since Ishida et al provides an alternative, versatile means to form similar linear radial form patterns with controlled paste deposition, it would have been apparent to one skilled in the art that the application means of Ishida et al would have provided advantages over the fixed applicator means of Kunz because of the greater versatility in shapes and sizes of "starfish patterns" which could be produced , thereby providing improved bonding/ reduced void formation on a wider variety of substrates and chips.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Kunz by substituting the paste applicator of Ishida et al for the applicator of Kunz to achieve better control of pattern application and paste dispensing to improve the prevention of void formation on a wider variety of semi-conductor chips and substrates.

As to claims 11-12, the forming of such patterns by starting and ending the pattern at the same point, or having such points at other than ends (e.g. center points) would have been choices within the purview of one of ordinary skill, based upon the desired paste patterns, capabilities of the microprocessor controller, etc which would not patentably distinguish over the prior art.

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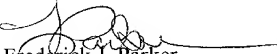
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frederick J. Parker whose telephone number is 703/308-3474. The examiner can normally be reached on Mon-Thur. 6:15am -3:45pm, and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on 703/308-2333. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703/308-0661.


Frederick J. Parker
Primary Examiner
Art Unit 1762

fjp